

Work Order ID 85876

\*85876\*

July-06-12 10:24:32 AM

Page 1

Item ID: D212-664-107

Accept

\*N900040100\*

Setup Start

\*NS1\*

Revision ID:

Item Name: Crosstube Low Standard Fwd

Stop

\*NS2\*

Start Date: 6/18/12 Start Qty: 1.00

\*1\*

Cust Item ID:

Required Date: 7/02/12 Req'd Qty: 1.00

\*1\*

Customer:

Reference:

Approvals: Process Plan:

*✓*

Date:

Tooling:

Date:

Run Start

\*NR1\*

QC:

Date:

SPC (Y/N):

Date:

Stop

\*NR2\*

| Sequence ID/<br>Work Center ID | Operation<br>Description | Set Up/<br>Run Hours | Tool ID | Tool # | Plan<br>Code | Accept<br>Qty | Reject<br>Qty | Reject<br>Number | Insp.<br>Stamp |
|--------------------------------|--------------------------|----------------------|---------|--------|--------------|---------------|---------------|------------------|----------------|
|--------------------------------|--------------------------|----------------------|---------|--------|--------------|---------------|---------------|------------------|----------------|

| Draw Nbr     | Revision Nbr |
|--------------|--------------|
| D212-664-147 | Rev B (DEO)  |

100  
**\*100\*** DOCUMENT CONTROL  
DC  
Document Control

0.00  
*50*  
0.00  
*00/02*

*MW 12/08/02*

110  
**\*110\*** Packaging  
Packaging  
Packaging

0.00

*Rm 12-7-10*

120  
**\*120\*** BENDING MACHINE - CROSSTUBES  
CNC Bend 2  
CNC Alpha 160 Bender

0.00

0.00

Bend tube as per Dwg D212-664-107 using CNC bender program 212-107

*MO*  
*Rm 12-7-11*

| W/O: |      | WORK ORDER CHANGES |    |      |     |                                     |                          |
|------|------|--------------------|----|------|-----|-------------------------------------|--------------------------|
| DATE | STEP | PROCEDURE CHANGE   | By | Date | Qty | Approval<br>Chief Eng /<br>Prod Mgr | Approval<br>QC Inspector |
|      |      |                    |    |      |     |                                     |                          |
|      |      |                    |    |      |     |                                     |                          |

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

**NOTE:** Date & initial all entries



| W/O: |      | WORK ORDER CHANGES |    |      |     |                                     |                          |  |
|------|------|--------------------|----|------|-----|-------------------------------------|--------------------------|--|
| DATE | STEP | PROCEDURE CHANGE   | By | Date | Qty | Approval<br>Chief Eng /<br>Prod Mgr | Approval<br>QC Inspector |  |
|      |      |                    |    |      |     |                                     |                          |  |
|      |      |                    |    |      |     |                                     |                          |  |

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

| NCR: |      | WORK ORDER NON-CONFORMANCE (NCR) |                             |                                 |                |                           |                       |                          |
|------|------|----------------------------------|-----------------------------|---------------------------------|----------------|---------------------------|-----------------------|--------------------------|
| DATE | STEP | Description of NC<br>Section A   | Corrective Action Section B |                                 |                | Verification<br>Section C | Approval<br>Chief Eng | Approval<br>QC Inspector |
|      |      |                                  | Initial<br>Chief Eng        | Action Description<br>Chief Eng | Sign &<br>Date |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |

NOTE: Date & initial all entries

Work Order ID 85876

\*85876\*

July-06-12 10:24:32 AM

Page 3

Item ID: D212-664-107

Accept

\*N900040100\*

Setup

Start

\*NS1\*

Revision ID:

Item Name: Crosstube Low Standard Fwd

Stop

\*NS2\*

Start Date: 6/18/12 Start Qty: 1.00 \*1\*

Cust Item ID:

Required Date: 7/02/12 Req'd Qty: 1.00 \*1\*

Customer:

Reference:

Approvals: Process Plan: \_\_\_\_\_

Date: \_\_\_\_\_

Tooling: \_\_\_\_\_

Date: \_\_\_\_\_

Run

Start

\*NR1\*

QC: \_\_\_\_\_

Date: \_\_\_\_\_

SPC (Y/N): \_\_\_\_\_

Date: \_\_\_\_\_

Stop

\*NR2\*

Sequence ID/  
Work Center ID

Operation  
Description

Set Up/  
Run Hours

Tool ID

Tool #

Plan  
Code

Accept  
Qty

Reject  
Qty

Reject  
Number

Insp.  
Stamp

150

\*150\*

QC

Quality Control

0.00

5/20/12

160

\*160\*

HandFXtube

Hand Finishing Crosstubes

0.00

0.00

\*\*\* WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE\*\*\*

1- CLEAN CROSSTUBE WITH WASH'N WIPE

180

Outsource process - NDT per QSI038 4.1

0.00

\*180\*

Outsource2

Outsource process - NDT

0.00

\*\*\* WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE\*\*\*

Liquid Penetrant Inspection as per QSI 038Or  
Issue P/O: 12028 LPI as per ASTM 1417  
Level 2 Attach copy of NDT results to work order

CK 12/07/11 ①

W 12/07/10

Dart Aerospace Ltd

| W/O: |      | WORK ORDER CHANGES |    |      |     |                                     |                          |
|------|------|--------------------|----|------|-----|-------------------------------------|--------------------------|
| DATE | STEP | PROCEDURE CHANGE   | By | Date | Qty | Approval<br>Chief Eng /<br>Prod Mgr | Approval<br>QC Inspector |
|      |      |                    |    |      |     |                                     |                          |
|      |      |                    |    |      |     |                                     |                          |

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_  
 Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

| NCR: |      | WORK ORDER NON-CONFORMANCE (NCR) |                             |                                 |                |                           |                       |                          |
|------|------|----------------------------------|-----------------------------|---------------------------------|----------------|---------------------------|-----------------------|--------------------------|
| DATE | STEP | Description of NC<br>Section A   | Corrective Action Section B |                                 |                | Verification<br>Section C | Approval<br>Chief Eng | Approval<br>QC Inspector |
|      |      |                                  | Initial<br>Chief Eng        | Action Description<br>Chief Eng | Sign &<br>Date |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |

NOTE: Date & initial all entries

Work Order ID 85876

July-06-12 10:24:32 AM

\*85876\*

Page 4

Item ID: D212-664-107

Accept

\*N900040100\*

Setup

Start

\*NS1\*

Revision ID:

Item Name: Crosstube Low Standard Fwd

Stop

\*NS2\*

Start Date: 6/18/12 Start Qty: 1.00 \*1\*

Cust Item ID:

Required Date: 7/02/12 Req'd Qty: 1.00 \*1\*

Customer:

Reference:

|            |               |       |            |       |      |       |       |
|------------|---------------|-------|------------|-------|------|-------|-------|
| Approvals: | Process Plan: | Date: | Tooling:   | Date: | Run  | Start | *NR1* |
|            | QC:           | Date: | SPC (Y/N): | Date: | Stop |       | *NR2* |

| Sequence ID/<br>Work Center ID | Operation<br>Description | Set Up/<br>Run Hours | Tool ID | Tool # | Plan<br>Code | Accept<br>Qty | Reject<br>Qty | Reject<br>Number | Insp.<br>Stamp |
|--------------------------------|--------------------------|----------------------|---------|--------|--------------|---------------|---------------|------------------|----------------|
|--------------------------------|--------------------------|----------------------|---------|--------|--------------|---------------|---------------|------------------|----------------|

|                                  |  |      |  |  |  |  |  |  |                  |
|----------------------------------|--|------|--|--|--|--|--|--|------------------|
| 190<br><b>*190*</b><br>Packaging | Packaging  | 0.00 |  |  |  |  |  |  | <i>7/1/12 30</i> |
|                                  | Memo   | 0.00 |  |  |  |  |  |  |                  |
|                                  | Ensure copy of NDT results attached to work order. |      |  |  |  |  |  |  |                  |

|                           |   |      |  |  |  |  |  |  |  |
|---------------------------|---|------|--|--|--|--|--|--|--|
| 200<br><b>*200*</b><br>QC | QC5- Inspect part completeness to step on W/O | 0.00 |  |  |  |  |  |  |  |
|---------------------------|---|------|--|--|--|--|--|--|--|

|                 |      |      |  |  |  |  |  |  |  |
|-----------------|------|------|--|--|--|--|--|--|--|
| Quality Control | Memo | 0.00 |  |  |  |  |  |  |  |
|-----------------|------|------|--|--|--|--|--|--|--|

\*\*\* WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE\*\*\*

Inspect for damage & ensure results are as per Dwg D212-664-107

|                                   |  |      |  |  |  |  |  |  |  |
|-----------------------------------|--|------|--|--|--|--|--|--|--|
| 202<br><b>*202*</b><br>HandFXtube |  | 0.00 |  |  |  |  |  |  |  |
|-----------------------------------|--|------|--|--|--|--|--|--|--|

|                           |      |      |  |  |  |  |  |  |  |
|---------------------------|------|------|--|--|--|--|--|--|--|
| Hand Finishing Crosstubes | Memo | 0.00 |  |  |  |  |  |  |  |
|---------------------------|------|------|--|--|--|--|--|--|--|

\*\*\* WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE\*\*\*

1- PRESSURE WASH AND THEN USE WASHH'N WIPE TO CLEAN  
CROSSTUBE BEFORE CHEMICAL CONVERSION

*7/1/12 16*

*7/1/12 16*

*7/1/12 16*

*For Andy*

| W/O: |      | WORK ORDER CHANGES |    |      |     |                                     |                          |
|------|------|--------------------|----|------|-----|-------------------------------------|--------------------------|
| DATE | STEP | PROCEDURE CHANGE   | By | Date | Qty | Approval<br>Chief Eng /<br>Prod Mgr | Approval<br>QC Inspector |
|      |      |                    |    |      |     |                                     |                          |
|      |      |                    |    |      |     |                                     |                          |

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

| NCR: |      | WORK ORDER NON-CONFORMANCE (NCR) |                             |                                 |                |                           |                       |                          |
|------|------|----------------------------------|-----------------------------|---------------------------------|----------------|---------------------------|-----------------------|--------------------------|
| DATE | STEP | Description of NC<br>Section A   | Corrective Action Section B |                                 |                | Verification<br>Section C | Approval<br>Chief Eng | Approval<br>QC Inspector |
|      |      |                                  | Initial<br>Chief Eng        | Action Description<br>Chief Eng | Sign &<br>Date |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |

NOTE: Date & initial all entries

Work Order ID 85876

\*85876\*

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July-06-12 10:24:32 AM

Item ID: D212-664-107

Accept

\*N900040100\*

Setup

Start

\*NS1\*

Revision ID:

Item Name: Crosstube Low Standard Fwd

Stop

\*NS2\*

Start Date: 6/18/12 Start Qty: 1.00

\*1\*

Cust Item ID:

Required Date: 7/02/12 Req'd Qty: 1.00

\*1\*

Customer:

Reference:

Approvals:

Process Plan:

Date:

Tooling:

Date:

Run

Start

\*NR1\*

QC:

Date:

SPC (Y/N):

Date:

Stop

\*NR2\*

Sequence ID/  
Work Center ID

Operation  
Description

Set Up/  
Run Hours

Tool ID

Tool #

Plan  
Code

Accept  
Qty

Reject  
Qty

Reject  
Number

Insp.  
Stamp

205

QC7-Inspect Chemical Conversion Coat

0.00

\*205\*

QC

Quality Control

Memo

0.00

\*\*\* WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE\*\*\*

210

Crosstubes

0.00

\*210\*

Crosstubes

Memo

0.00

Crosstubes

\*\*\* WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE\*\*\*

1-Rivet Cuffs as per Dwg D212-664-147. with Sika flex in Between tube & Cuff

A/R SIKAFLEX -241/291 BATCH: 122130

215

QC5- Inspect part completeness to step on W/O

0.00

\*215\*

QC

Quality Control

Memo

0.00

\*\*\* WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE\*\*\*

DAS  
16  
17/07/14

| W/O: |      | WORK ORDER CHANGES |    |      |     |                                     |
|------|------|--------------------|----|------|-----|-------------------------------------|
| DATE | STEP | PROCEDURE CHANGE   | By | Date | Qty | Approval<br>Chief Eng /<br>Prod Mgr |
|      |      |                    |    |      |     |                                     |
|      |      |                    |    |      |     |                                     |

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

| NCR: |      | WORK ORDER NON-CONFORMANCE (NCR) |                             |                                 |                |                           |                       |                          |
|------|------|----------------------------------|-----------------------------|---------------------------------|----------------|---------------------------|-----------------------|--------------------------|
| DATE | STEP | Description of NC<br>Section A   | Corrective Action Section B |                                 |                | Verification<br>Section C | Approval<br>Chief Eng | Approval<br>QC Inspector |
|      |      |                                  | Initial<br>Chief Eng        | Action Description<br>Chief Eng | Sign &<br>Date |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |

NOTE: Date & initial all entries

**Work Order ID 85876****\*85876\***

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July-06-12 10:24:32 AM

**Item ID:** D212-664-107**Accept****\*N900040100\*****Setup****Start****\*NS1\*****Revision ID:****Item Name:** Crosstube Low Standard Fwd**Stop****\*NS2\*****Start Date:** 6/18/12    **Start Qty:** 1.00**\*1\*****Cust Item ID:****Required Date:** 7/02/12    **Req'd Qty:** 1.00**\*1\*****Customer:****Reference:****Approvals:****Process Plan:****Date:****Tooling:****Date:****Run****Start****\*NR1\*****QC:****Date:****SPC (Y/N):****Date:****Stop****\*NR2\*****Sequence ID/  
Work Center ID****Operation  
Description****Set Up/  
Run Hours****Tool ID****Tool #****Plan  
Code****Accept  
Qty****Reject  
Qty****Reject  
Number****Insp.  
Stamp**

220

**\*220\***

SprayPaint

SprayPaint

0.00

0.00

SprayPaint

**Memo**

\*\*\* WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE\*\*\*

1-Prime inside and outside crosstube as per QSI 005 4.2

2-Paint outside crosstube with White Imron as per QSI 005 4.2

PRIME:

Start Time: 5:00Finish Time: 6:00

PAINT:

Start Time: 1:00Finish Time: 2:00

230

QC14- Inspect Spray Paint

0.00

**\*230\***

QC

Quality Control

**Memo**

0.00

Wrap in plastic bag to protect from scratches

W 12-07-310 8 12-08-01

| W/O: |      | WORK ORDER CHANGES |    |      |     |                                     |                          |  |
|------|------|--------------------|----|------|-----|-------------------------------------|--------------------------|--|
| DATE | STEP | PROCEDURE CHANGE   | By | Date | Qty | Approval<br>Chief Eng /<br>Prod Mgr | Approval<br>QC Inspector |  |
|      |      |                    |    |      |     |                                     |                          |  |
|      |      |                    |    |      |     |                                     |                          |  |

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

| NCR: |      | WORK ORDER NON-CONFORMANCE (NCR) |                             |                                 |                |                           |                       |                          |
|------|------|----------------------------------|-----------------------------|---------------------------------|----------------|---------------------------|-----------------------|--------------------------|
| DATE | STEP | Description of NC<br>Section A   | Corrective Action Section B |                                 |                | Verification<br>Section C | Approval<br>Chief Eng | Approval<br>QC Inspector |
|      |      |                                  | Initial<br>Chief Eng        | Action Description<br>Chief Eng | Sign &<br>Date |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |

NOTE: Date & initial all entries



| W/O: |      | WORK ORDER CHANGES |    |      |     |                                     |                          |
|------|------|--------------------|----|------|-----|-------------------------------------|--------------------------|
| DATE | STEP | PROCEDURE CHANGE   | By | Date | Qty | Approval<br>Chief Eng /<br>Prod Mgr | Approval<br>QC Inspector |
|      |      |                    |    |      |     |                                     |                          |
|      |      |                    |    |      |     |                                     |                          |

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

| NCR: |      | WORK ORDER NON-CONFORMANCE (NCR) |                             |                                 |                |                           |                       |                          |
|------|------|----------------------------------|-----------------------------|---------------------------------|----------------|---------------------------|-----------------------|--------------------------|
| DATE | STEP | Description of NC<br>Section A   | Corrective Action Section B |                                 |                | Verification<br>Section C | Approval<br>Chief Eng | Approval<br>QC Inspector |
|      |      |                                  | Initial<br>Chief Eng        | Action Description<br>Chief Eng | Sign &<br>Date |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |

NOTE: Date & initial all entries

**Work Order ID 85876****\*85876\***

Page 8

July-06-12 10:24:32 AM

Item ID: D212-664-107

Accept

**\*N900040100\***

Setup

Start

**\*NS1\***

Revision ID:

Item Name: Crosstube Low Standard Fwd

Stop

**\*NS2\***

Start Date: 6/18/12 Start Qty: 1.00

**\*1\***

Cust Item ID:

Required Date: 7/02/12 Req'd Qty: 1.00

**\*1\***

Customer:

Reference:

|            |               |       |          |       |     |       |              |
|------------|---------------|-------|----------|-------|-----|-------|--------------|
| Approvals: | Process Plan: | Date: | Tooling: | Date: | Run | Start | <b>*NR1*</b> |
|            |               |       |          |       |     | Stop  | <b>*NR2*</b> |

| Sequence ID/<br>Work Center ID   | Operation<br>Description                        | Set Up/<br>Run Hours | Tool ID | Tool #    | Plan<br>Code | Accept<br>Qty | Reject<br>Qty | Reject<br>Number | Insp.<br>Stamp |
|----------------------------------|---|----------------------|---------|-----------|--------------|---------------|---------------|------------------|----------------|
| 255<br><b>*255*</b><br>Packaging | Pick Kit<br>Memo                                | 0.00                 |         |           |              |               |               |                  | 12/12/12       |
| 260<br><b>*260*</b><br>QC        | QC4- 100% Inspect kits for completeness<br>Memo | 0.00                 | 0.00    | DAS<br>16 | 12/06/12     |               |               |                  |                |
| 270<br><b>*270*</b><br>Packaging | Packaging<br>Memo                               | 0.00                 |         |           |              |               |               |                  | 12/18/12       |

260 QC4- 100% Inspect kits for completeness

**\*260\***  
QC  
Quality Control

|                                  |  |      |
|----------------------------------|--|------|
| 270<br><b>*270*</b><br>Packaging | Packaging<br>Memo                                      | 0.00 |
|                                  | Identify and pack for shipping as per PPP D212-664-107 | 0.00 |

| W/O: |      | WORK ORDER CHANGES |    |      |     |                                     |                          |
|------|------|--------------------|----|------|-----|-------------------------------------|--------------------------|
| DATE | STEP | PROCEDURE CHANGE   | By | Date | Qty | Approval<br>Chief Eng /<br>Prod Mgr | Approval<br>QC Inspector |
|      |      |                    |    |      |     |                                     |                          |
|      |      |                    |    |      |     |                                     |                          |

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

| NCR: |      | WORK ORDER NON-CONFORMANCE (NCR) |                             |                                 |                |                           |                       |                          |
|------|------|----------------------------------|-----------------------------|---------------------------------|----------------|---------------------------|-----------------------|--------------------------|
| DATE | STEP | Description of NC<br>Section A   | Corrective Action Section B |                                 |                | Verification<br>Section C | Approval<br>Chief Eng | Approval<br>QC Inspector |
|      |      |                                  | Initial<br>Chief Eng        | Action Description<br>Chief Eng | Sign &<br>Date |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |

NOTE: Date & initial all entries

**Work Order ID 85876****\*85876\***

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July-06-12 10:24:32 AM

Item ID: D212-664-107

Accept

**\*N900040100\***

Setup

Start

**\*NS1\***

Revision ID:

Item Name: Crosstube Low Standard Fwd

Stop

**\*NS2\***

Start Date: 6/18/12 Start Qty: 1.00

**\*1\***

Cust Item ID:

Required Date: 7/02/12 Req'd Qty: 1.00

**\*1\***

Customer:

Reference:

Approvals:

Process Plan:

Date:

Tooling:

Date:

Run

Start

**\*NR1\***

QC:

Date:

SPC (Y/N):

Date:

Stop

**\*NR2\***Sequence ID/  
Work Center IDOperation  
DescriptionSet Up/  
Run Hours

Tool ID

Tool #

Plan  
CodeAccept  
QtyReject  
QtyReject  
NumberInspec.  
Stamp

280

QC21- Final Inspection - Work Order Release

0.00

**\*280\***

QC

Quality Control

Memo

0.00

MLJ 12/08/02

U 12/08/02

| W/O: |      | WORK ORDER CHANGES |    |      |     |                                     |                          |
|------|------|--------------------|----|------|-----|-------------------------------------|--------------------------|
| DATE | STEP | PROCEDURE CHANGE   | By | Date | Qty | Approval<br>Chief Eng /<br>Prod Mgr | Approval<br>QC Inspector |
|      |      |                    |    |      |     |                                     |                          |
|      |      |                    |    |      |     |                                     |                          |

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

| NCR: |      | WORK ORDER NON-CONFORMANCE (NCR) |                             |                                 |                |                           |                       |                          |
|------|------|----------------------------------|-----------------------------|---------------------------------|----------------|---------------------------|-----------------------|--------------------------|
| DATE | STEP | Description of NC<br>Section A   | Corrective Action Section B |                                 |                | Verification<br>Section C | Approval<br>Chief Eng | Approval<br>QC Inspector |
|      |      |                                  | Initial<br>Chief Eng        | Action Description<br>Chief Eng | Sign &<br>Date |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |

NOTE: Date & initial all entries

# Picklist Print

June-18-12 10:45:53 AM

Page 1

Work Order ID: 85876

Parent Item: D212-664-107

Parent Item Name: Crosstube Low Standard Fwd

\*85876\*  
\*D212-664-107\*

Start Date: 18/06/2012

Required Date: 02/07/2012

Start Qty: 1.00

Required Qty: 1.00

Comments:

IPP Rev:A New Issue 07.09.12 EC verified by: JLM  
 IPP Rev:B ECN 1100 08-01-11 DD verified by: EC  
 IPP Rev:C Ecn 1121 08-02-25 DD Verified by:ec IPP Rev:D  
 10.05.27 added pick kit DD verf:EC IPP Rev:E 11.10.17  
 added SEQ 215 DD verf:EC IPP REV:F 11.11.03 as per  
 chg003 DD verf:EC

| Component Item ID/<br>Item Name | Replacement<br>Item ID | Mfg/<br>Purch | Bin<br>Item | Primary<br>Location | Last<br>Location | Route<br>Seq ID | Unit of<br>Measure | Qty on<br>Hand | Qty per Kit | Total<br>Qty | Qty<br>Issued | Date<br>Issued | Status  |
|---------------------------------|------------------------|---------------|-------------|---------------------|------------------|-----------------|--------------------|----------------|-------------|--------------|---------------|----------------|---------|
| D212-664-107TRN                 |                        | Manufactured  | No          | 13 79678            |                  | 140             | Each               | 0.0000         | 1           | 1            | 1             | Rm             | 12-7-10 |

\*D212-664-107TRN\*

Crosstube Turning Detail

|         |              |    |     |      |        |    |   |
|---------|--------------|----|-----|------|--------|----|---|
| D3659-1 | Manufactured | No | 220 | Each | 9.0000 | 2  | 2 |
|         |              |    |     |      |        | ** |   |

\*D3659-1\*

CUFF

| Location | Loc Qty | Loc Code |
|----------|---------|----------|
| ST482    | 9       |          |
| 67005    | 1       |          |
| 75173    | 1       |          |
| 77032    | 7       |          |

JW 12-7-10

CR3212-4-06

Purchased

No

240 Each 202.0000 44

\*\*

\*CR3212-4-06\*

CHERRY RIVET

12-07-18

| Location | Loc Qty | Loc Code |
|----------|---------|----------|
| ST330    | 149     |          |
| 120521   | 149     |          |
| ST331    | 53      |          |
| 112492   | 18      |          |
| 112794   | 8       |          |
| 119717   | 27      |          |

R# 122378

| W/O: |      | WORK ORDER CHANGES |    |      |     |                                     |                          |
|------|------|--------------------|----|------|-----|-------------------------------------|--------------------------|
| DATE | STEP | PROCEDURE CHANGE   | By | Date | Qty | Approval<br>Chief Eng /<br>Prod Mgr | Approval<br>QC Inspector |
|      |      |                    |    |      |     |                                     |                          |
|      |      |                    |    |      |     |                                     |                          |

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

| NCR: |      | WORK ORDER NON-CONFORMANCE (NCR) |                             |                                 |                |                           |                       |                          |
|------|------|----------------------------------|-----------------------------|---------------------------------|----------------|---------------------------|-----------------------|--------------------------|
| DATE | STEP | Description of NC<br>Section A   | Corrective Action Section B |                                 |                | Verification<br>Section C | Approval<br>Chief Eng | Approval<br>QC Inspector |
|      |      |                                  | Initial<br>Chief Eng        | Action Description<br>Chief Eng | Sign &<br>Date |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |

NOTE: Date & initial all entries

# Picklist Print

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Page 2

Work Order ID: 85876

\*85876\*

Parent Item: D212-664-107

\*D212-664-107\*

Parent Item Name: Crosstube Low Standard Fwd

Start Date: 18/06/2012

Required Date: 02/07/2012

D3595-063-450

Manufactured No

240

Each

155.8095

4

4

\*\*

12-08-01

\*D3595-063-450\*

RUBBER CUSHION

| Location | Loc Qty | Loc Code |
|----------|---------|----------|
|----------|---------|----------|

|        |           |  |
|--------|-----------|--|
| LG     | 36        |  |
| 82511  | 36        |  |
| LG051  | 109.7     |  |
| 80161  | 1.7       |  |
| 84715  | 108       |  |
| MAT052 | 10.109474 |  |
| 67353  | 2         |  |
| 68893  | 6         |  |
| 70113  | 0.56      |  |
| 71354  | 0.2       |  |
| 74113  | 0.349474  |  |
| 75597  | 1         |  |

MS21920-25

Purchased No

240

Each

107.0000

4

4

\*\*

12-8-2

\*MS21920-25\*

Clamp(per MIL-DTL-8783C)

| Location | Loc Qty | Loc Code |
|----------|---------|----------|
|----------|---------|----------|

|        |    |  |
|--------|----|--|
| LG050  | 67 |  |
| 116264 | 2  |  |
| 117998 | 4  |  |
| 118142 | 4  |  |
| 119339 | 2  |  |
| 119746 | 2  |  |
| 120475 | 7  |  |
| 120920 | 46 |  |
| LG051  | 40 |  |
| 121583 | 40 |  |

| W/O: |      | WORK ORDER CHANGES |    |      |     |                                     |                          |
|------|------|--------------------|----|------|-----|-------------------------------------|--------------------------|
| DATE | STEP | PROCEDURE CHANGE   | By | Date | Qty | Approval<br>Chief Eng /<br>Prod Mgr | Approval<br>QC Inspector |
|      |      |                    |    |      |     |                                     |                          |
|      |      |                    |    |      |     |                                     |                          |

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

| NCR: |      | WORK ORDER NON-CONFORMANCE (NCR) |                             |                                 |                |                           |                       |                          |
|------|------|----------------------------------|-----------------------------|---------------------------------|----------------|---------------------------|-----------------------|--------------------------|
| DATE | STEP | Description of NC<br>Section A   | Corrective Action Section B |                                 |                | Verification<br>Section C | Approval<br>Chief Eng | Approval<br>QC Inspector |
|      |      |                                  | Initial<br>Chief Eng        | Action Description<br>Chief Eng | Sign &<br>Date |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |

NOTE: Date & initial all entries

# Picklist Print

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Page 3

Work Order ID: 85876

\*85876\*  
\*D212-664-107\*

Parent Item: D212-664-107

Parent Item Name: Crosstube Low Standard Fwd

Start Date: 18/06/2012

Required Date: 02/07/2012

Start Qty: 1.00

Required Qty: 1.00

D2893-1

Manufactured No

240

Each

25.0000

2

2

\*\*

12 08:01

\*D2893-1\*

2.75 Support

B# 87922

| Location | Loc Qty | Loc Code |
|----------|---------|----------|
| LG       | 9       |          |
| 83056    | 9       |          |
| LG052    | 16      |          |
| 72865    | 2       |          |
| 80271    | 13      |          |
| 82228    | 1       |          |

D3428-1

Manufactured No

260

Each

39.0000

1

1

\*\*

50

\*D3428-1\*

| Location | Loc Qty | Loc Code |
|----------|---------|----------|
| ST042    | 39      |          |
| 78933    | 2       |          |
| 81881    | 15      |          |
| 83582    | 10      |          |
| 85228    | 12      |          |

AN6-35A

Purchased No

260

Each

58.0000

4

4

\*\*

M122416

12/8/2010

S \*AN6-35A\*  
BOLT

| Location | Loc Qty | Loc Code |
|----------|---------|----------|
| 342      | 50      |          |
| 121181   | 50      |          |
| ST342    | 8       |          |
| 120187   | 8       |          |

| W/O: |      | WORK ORDER CHANGES |    |      |     |                                     |                          |
|------|------|--------------------|----|------|-----|-------------------------------------|--------------------------|
| DATE | STEP | PROCEDURE CHANGE   | By | Date | Qty | Approval<br>Chief Eng /<br>Prod Mgr | Approval<br>QC Inspector |
|      |      |                    |    |      |     |                                     |                          |
|      |      |                    |    |      |     |                                     |                          |

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

| NCR: |      | WORK ORDER NON-CONFORMANCE (NCR) |                             |                                 |                |                           |                       |                          |
|------|------|----------------------------------|-----------------------------|---------------------------------|----------------|---------------------------|-----------------------|--------------------------|
| DATE | STEP | Description of NC<br>Section A   | Corrective Action Section B |                                 |                | Verification<br>Section C | Approval<br>Chief Eng | Approval<br>QC Inspector |
|      |      |                                  | Initial<br>Chief Eng        | Action Description<br>Chief Eng | Sign &<br>Date |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |

NOTE: Date & initial all entries

# Picklist Print

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Page 4

Work Order ID: 85876

Parent Item: D212-664-107

Parent Item Name: Crosstube Low Standard Fwd

\*85876\*  
\*D212-664-107\*

Start Date: 18/06/2012

Required Date: 02/07/2012

Start Qty: 1.00

Required Qty: 1.00

AN6-36A

Purchased No

260 Each 68.0000

4 4

\*\*

M122416 SF

\*AN6-36A\*

Bolt

| Location | Loc Qty | Loc Code |
|----------|---------|----------|
| ST342    | 68      |          |
| 118422   | 2       |          |
| 119449   | 1       |          |
| 120187   | 4       |          |
| 120423   | 61      |          |

MS21042L6

Purchased No

260 Each 598.0000

6 6

\*\*

S

\*MS21042L6\*

Nut

| Location | Loc Qty | Loc Code |
|----------|---------|----------|
| ST300    | 598     |          |
| 117677   | 25      |          |
| 118384   | 3       |          |
| 118927   | 48      |          |
| 119075   | 322     |          |
| 120308   | 200     |          |

AN960JD616

NAS1149D0663J Purchased

No

260 Each 0.0000

18 18

\*\*

M121708 SF  
18/6/12

2x  
M121243

\*AN960JD616\*

Washer

| W/O: |      | WORK ORDER CHANGES |    |      |     |                                     |                          |
|------|------|--------------------|----|------|-----|-------------------------------------|--------------------------|
| DATE | STEP | PROCEDURE CHANGE   | By | Date | Qty | Approval<br>Chief Eng /<br>Prod Mgr | Approval<br>QC Inspector |
|      |      |                    |    |      |     |                                     |                          |
|      |      |                    |    |      |     |                                     |                          |

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

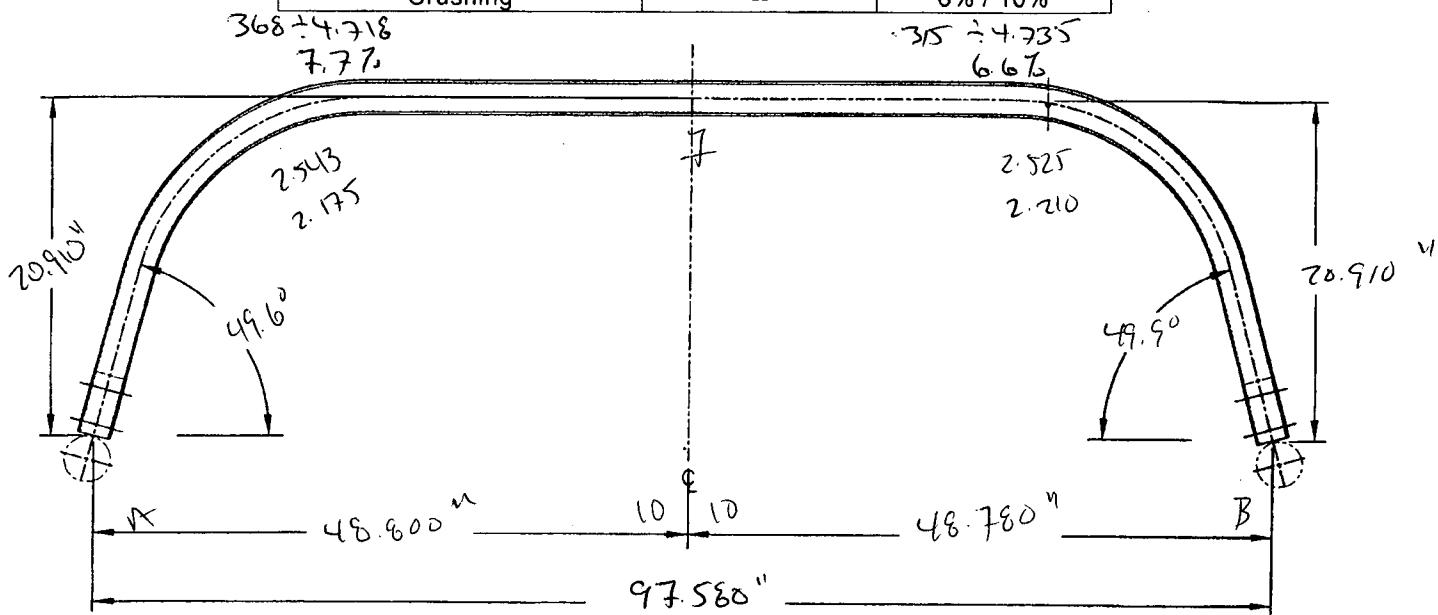
Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

| NCR: |      | WORK ORDER NON-CONFORMANCE (NCR) |                             |                                 |                |                           |                       |                          |
|------|------|----------------------------------|-----------------------------|---------------------------------|----------------|---------------------------|-----------------------|--------------------------|
| DATE | STEP | Description of NC<br>Section A   | Corrective Action Section B |                                 |                | Verification<br>Section C | Approval<br>Chief Eng | Approval<br>QC Inspector |
|      |      |                                  | Initial<br>Chief Eng        | Action Description<br>Chief Eng | Sign &<br>Date |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |

NOTE: Date & initial all entries

|  |              |              |
|--|--------------|--------------|
| DART AEROSPACE LTD                           | Work Order:  | 85876        |
| Description: Crosstube Low Fwd (205/212/412) | Part Number: | D212-664-107 |
| Inspection Dwg: D212-664-147 Rev: B          |              | Page 1 of 1  |

| Required Dimension | Min   | Max      |
|--------------------|-------|----------|
| Height             | 20.79 | 21.05    |
| 1/2 Span           | 48.55 | 48.81    |
| Angle              | 49    | 52       |
| Total Span         | 97.1  | 97.62    |
| Bending Passes     | 8     | --       |
| Crushing           | --    | 6% / 10% |



|  | Side A | Model | Side B |
|--|--------|-------|--------|
| Bending Passes   | 10     | 7     | 10     |
| Crushing   | 7.77   |       | 6.67   |
| Comments   |        |       |        |
| <p>Side A = 10 Passes</p> <p>Side Model = 7 Passes</p> <p>Side B = 10 Passes</p> <p>Mark line at Bottom of L302.</p> |        |       |        |
| QC15 Inspection  |        |       |        |
| Date   |        |       |        |

| Rev | Date     | Change                             | Revised by | Approved |
|-----|----------|------------------------------------|------------|----------|
| A   | 08.02.29 | New Issue                          | KJ/JM      |          |
| B   | 10.01.21 | Dwg Rev updated                    | KJ         |          |
| C   | 12.04.16 | Added bending, crushing dimensions | KJ         | IP       |

| W/O: |      | WORK ORDER CHANGES |    |      |     |                                     |                          |
|------|------|--------------------|----|------|-----|-------------------------------------|--------------------------|
| DATE | STEP | PROCEDURE CHANGE   | By | Date | Qty | Approval<br>Chief Eng /<br>Prod Mgr | Approval<br>QC Inspector |
|      |      |                    |    |      |     |                                     |                          |
|      |      |                    |    |      |     |                                     |                          |

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_  
 Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

| NCR: |      | WORK ORDER NON-CONFORMANCE (NCR) |                             |                                 |                |                           |                       |                          |
|------|------|----------------------------------|-----------------------------|---------------------------------|----------------|---------------------------|-----------------------|--------------------------|
| DATE | STEP | Description of NC<br>Section A   | Corrective Action Section B |                                 |                | Verification<br>Section C | Approval<br>Chief Eng | Approval<br>QC Inspector |
|      |      |                                  | Initial<br>Chief Eng        | Action Description<br>Chief Eng | Sign &<br>Date |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |

NOTE: Date & initial all entries

B

| Item | Qty<br>-147 | Qty<br>-147B | Part Number       | Description   |
|------|-------------|--------------|-------------------|---|
| 1    | X           |              | D212-664-147      | CROSSTUBE ASSEMBLY (205/212/412 LOW FWD)  |
| 2    |             | X            | D212-664-147B     | CROSSTUBE ASSEMBLY (214 LOW FWD)  |
| 3    | 1           | 1            | D6019-128         | CROSSTUBE   |
| 4    | 2           | 2            | D2893-1           | SUPPORT   |
| 5    | 4           | 4            | D3595-063-450     | RUBBER CUSHION  |
| 6    | 2           | 2            | D3659-1           | CUFF  |
| 7    | 4           | 4            | MS21920-25        | CLAMP (OR MS21920-26)   |
| 8    | 44          | 44           | CR32124-06        | RIVET (OR M78853-4-06)  |
| 9    | A/R         | A/R          | MAGNOBOND 6398    | ROCKWELL SPECIFICATION RBO-120-023 ADHESIVE (TEXTRON/BELL SPEC. 299-947-100, TYPE II, CLASS 2 ADHESIVE) |
| 10   | A/R         | A/R          | SIKAFLEX-241/-291 | SEALANT (OR PROSEAL 890 OR MIL-S-8802 CLASS B2 SEALANT)   |

## GENERAL NOTES:

- 1) MATERIAL: MANUFACTURED FROM D6019-128  
FINISHED LENGTH = 126.528±0.020 (BEFORE BENDING/TRIMMING)
- 2) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005.4.1  
PRIME INSIDE AND OUTSIDE PER DART QSI 005.4.2  
PAINT OUTSIDE PER DART QSI 005.4.2
- 3) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED.
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED.
- 5) BREAK SHARP EDGES 0.005 TO 0.010 MAX.
- 6) IDENTIFICATION: SCRIBE DART PART NUMBER "D212-664-XXX" AND BATCH NUMBER ON INSIDE OF CUFF USING VIBRATING STYLS.
- 7) WEIGHT: D212-664-147 = 24.2 lbs (PER IIN-D212-664)  
D212-664-147B = 24.2 lbs (PER IIN-D212-664)
- 8) PART IS SYMMETRIC ABOUT CENTERLINE.
- 9) WHEN MACHINING TAPER, RUN CUTTER OFF PART. BLEND OUT EDGE LONGITUDINALLY, TRANSITION SHOULD BE SMOOTH.
- 10) BEND PROGRESSIVELY WITH A MINIMUM OF 8 PASSES. MAXIMUM TUBE FLATTENING DUE TO BENDING IS 6% BASED ON O.D. EXCEPT UP TO 10% IS ALLOWED IN AREA NOTED.
- 11) LIQUID PENETRANT INSPECT OUTSIDE SURFACE OF CROSSTUBE PER QSI 038.
- 12) INSTALL D2893-1 SUPPORT USING 0.03" TO 0.06" THICK LAYER OF MAGNOBOND 6398 TO THE SURFACE OF D2893-1 THAT WILL BE IN CONTACT WITH THE CROSSTUBE PER QSI 015. LET CURE FOR 12 HOURS AFTER INSTALLATION AND PRIOR TO PACKAGING.
- 13) INSTALL MS21920-25 CLAMPS (OR -26) WITH D3595-063-450 RUBBER CUSHIONS TO SECURE THE D2893-1 SUPPORT ON TOP SIDE OF THE CROSSTUBE. ENSURE CLAMPS ARE OPPOSITE OF CROSSTUBE SUPPORT.
- 14) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.
- 15) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING.
- 16) INSTALL D3659-1 CUFF AFTER CHEMICAL CONVERSION COAT BUT BEFORE PAINT, WITH A LAYER OF SIKAFLEX-241/-291 OR PROSEAL 890 OR MIL-S-8802 CLASS B2 SEALANT BETWEEN CUFF AND CROSSTUBE. SEAL EDGE OF CUFF TO ENSURE NO GAPS.
- 17) TOUCH-UP HOLES WITH CHEMICAL CONVERSION COAT.

SHOP COPY

RETURN TO

ENGINEERING

UNCONTROLLED COPY

SUBJECT TO AMENDMENT

WITHOUT NOTICE

WORK ORDER

NO. 85876 MLJ

12/06/18

DEO ATTACHED

PER ECR #11-64  
110726  
UNDER REVIEW  
P110813RELEASED  
2009-10-29

|            |  |  |              |
|------------|--|--|--------------|
| B          | REVISE GENERAL NOTES/PART LIST; UPDATE TO CURRENT STANDARDS; ADD -147B (ZN C4-2, D4-2) | RF   | 09.09.30     |
| A          | NEW ISSUE  | CP   | 07.07.07     |
| REV.       | DESCRIPTION  | BY   | DATE         |
| DESIGN     | RP   | DART AEROSPACE LTD   |              |
| DRAWN      | RF   | HAWKESBURY, ONTARIO, CANADA  |              |
| CHECKED    | RP   | DRAWING NO.  | REV. B       |
| MFG. APPR. | ND   | D212-664-147   | SHEET 1 OF 4 |
| APPROVED   | RP   | TITLE  | SCALE        |
| DE APPR.   | RP   | CROSSTUBE (205/212/412 LOW FWD)  | NTS          |
| DATE       | 09.09.30   | COPYRIGHT © 2007 BY DART AEROSPACE LTD<br>THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD. |              |

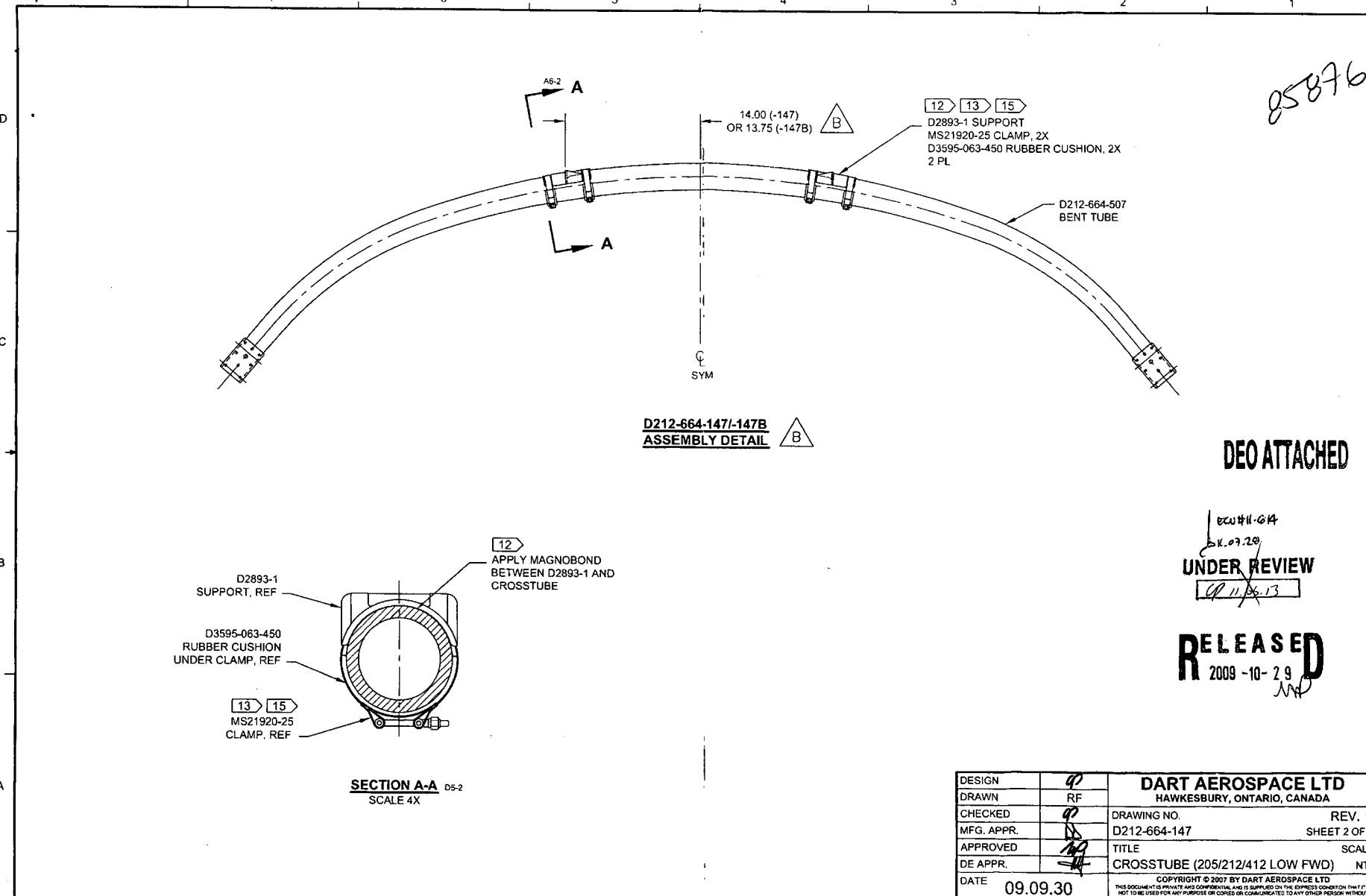
| W/O: |      | WORK ORDER CHANGES |    |      |     |                                     |                          |
|------|------|--------------------|----|------|-----|-------------------------------------|--------------------------|
| DATE | STEP | PROCEDURE CHANGE   | By | Date | Qty | Approval<br>Chief Eng /<br>Prod Mgr | Approval<br>QC Inspector |
|      |      |                    |    |      |     |                                     |                          |
|      |      |                    |    |      |     |                                     |                          |

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

| NCR: |      | WORK ORDER NON-CONFORMANCE (NCR) |                             |                                 |                |                           |                       |                          |
|------|------|----------------------------------|-----------------------------|---------------------------------|----------------|---------------------------|-----------------------|--------------------------|
| DATE | STEP | Description of NC<br>Section A   | Corrective Action Section B |                                 |                | Verification<br>Section C | Approval<br>Chief Eng | Approval<br>QC Inspector |
|      |      |                                  | Initial<br>Chief Eng        | Action Description<br>Chief Eng | Sign &<br>Date |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |

NOTE: Date & initial all entries



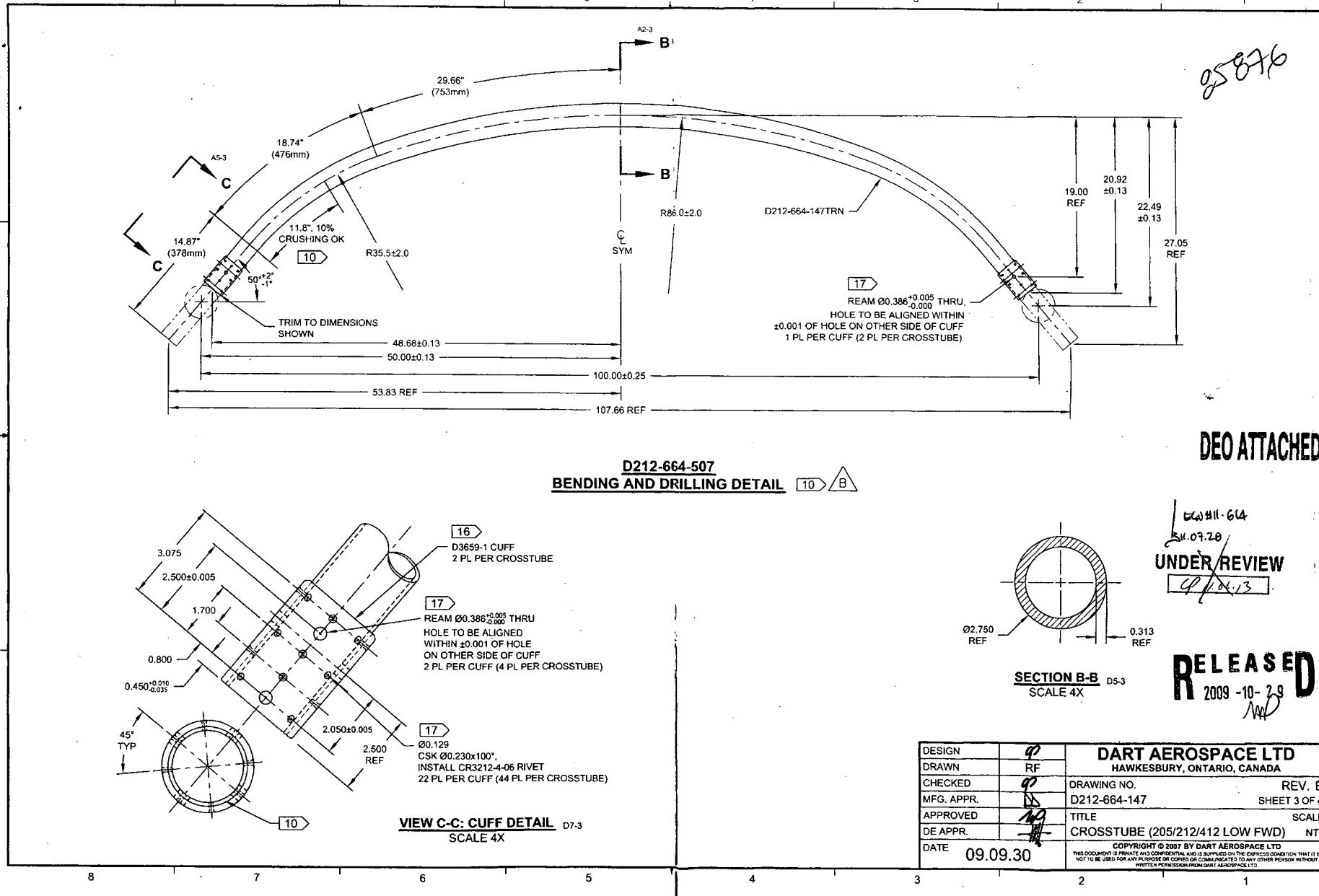
| W/O: |      | WORK ORDER CHANGES |    |      |     |                                     |                          |
|------|------|--------------------|----|------|-----|-------------------------------------|--------------------------|
| DATE | STEP | PROCEDURE CHANGE   | By | Date | Qty | Approval<br>Chief Eng /<br>Prod Mgr | Approval<br>QC Inspector |
|      |      |                    |    |      |     |                                     |                          |
|      |      |                    |    |      |     |                                     |                          |

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

| NCR: |      | WORK ORDER NON-CONFORMANCE (NCR) |                             |                                 |                |                           |                       |                          |
|------|------|----------------------------------|-----------------------------|---------------------------------|----------------|---------------------------|-----------------------|--------------------------|
| DATE | STEP | Description of NC<br>Section A   | Corrective Action Section B |                                 |                | Verification<br>Section C | Approval<br>Chief Eng | Approval<br>QC Inspector |
|      |      |                                  | Initial<br>Chief Eng        | Action Description<br>Chief Eng | Sign &<br>Date |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |

NOTE: Date & initial all entries



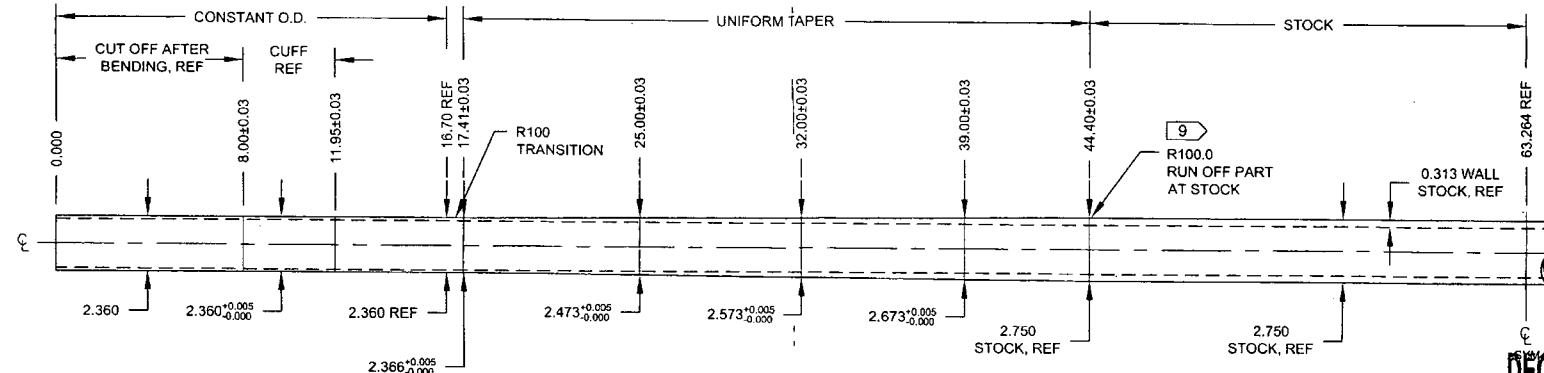
| W/O: |      | WORK ORDER CHANGES |    |      |     |                                     |                          |
|------|------|--------------------|----|------|-----|-------------------------------------|--------------------------|
| DATE | STEP | PROCEDURE CHANGE   | By | Date | Qty | Approval<br>Chief Eng /<br>Prod Mgr | Approval<br>QC Inspector |
|      |      |                    |    |      |     |                                     |                          |
|      |      |                    |    |      |     |                                     |                          |

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

| NCR: |      | WORK ORDER NON-CONFORMANCE (NCR) |                             |                                 |                |                           |                       |                          |
|------|------|----------------------------------|-----------------------------|---------------------------------|----------------|---------------------------|-----------------------|--------------------------|
| DATE | STEP | Description of NC<br>Section A   | Corrective Action Section B |                                 |                | Verification<br>Section C | Approval<br>Chief Eng | Approval<br>QC Inspector |
|      |      |                                  | Initial<br>Chief Eng        | Action Description<br>Chief Eng | Sign &<br>Date |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |

NOTE: Date & initial all entries



D212-664-147TRN  
TURNING DETAIL

~~DET ATTACHED~~

ECN #1-614  
11.07.26

~~UNDER REVIEW~~  
01/06/13

~~RELEASED~~  
2009-10-29  
AB

|            |          |                                 |
|------------|----------|---------------------------------|
| DESIGN     | 90       | DART AEROSPACE LTD              |
| DRAWN      | RF       | HAWKESBURY, ONTARIO, CANADA     |
| CHECKED    | 90       | DRAWING NO.                     |
| MFG. APPR. | DA       | D212-664-147                    |
| APPROVED   | AB       | REV. B                          |
| DE APPR.   | AB       | SHEET 4 OF 4                    |
| DATE       | 09.09.30 | TITLE                           |
|            |          | CROSSTUBE (205/212/412 LOW FWD) |
|            |          | NTS                             |

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| W/O: |      | WORK ORDER CHANGES |    |      |     |                                     |                          |
|------|------|--------------------|----|------|-----|-------------------------------------|--------------------------|
| DATE | STEP | PROCEDURE CHANGE   | By | Date | Qty | Approval<br>Chief Eng /<br>Prod Mgr | Approval<br>QC Inspector |
|      |      |                    |    |      |     |                                     |                          |
|      |      |                    |    |      |     |                                     |                          |

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

| NCR: |      | WORK ORDER NON-CONFORMANCE (NCR) |                             |                                 |                |                           |                       |                          |
|------|------|----------------------------------|-----------------------------|---------------------------------|----------------|---------------------------|-----------------------|--------------------------|
| DATE | STEP | Description of NC<br>Section A   | Corrective Action Section B |                                 |                | Verification<br>Section C | Approval<br>Chief Eng | Approval<br>QC Inspector |
|      |      |                                  | Initial<br>Chief Eng        | Action Description<br>Chief Eng | Sign &<br>Date |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |

NOTE: Date & initial all entries

|                             |  |               |   |                                |                           |              |
|-----------------------------|--|---------------|---|--------------------------------|---------------------------|--------------|
| DRAWING NO.<br>D212-664-147 | TITLE<br>CROSSTUBE ASS'Y (205 LOW FWD) | REV. B        | DART AEROSPACE LTD<br>ENGINEERING ORDER | D.E.O. NO.<br>D212-664-147-B-1 | SHEET NO.<br>SHEET 1 OF 1 | SCALE<br>NTS |
| DRAWN <i>9P</i>             | CHECKED <i>ASS</i>                     |               | MFG. APPR. <i>183</i>                   | APPROVED <i>JAD</i>            | DE APPR. <i>HT</i>        |              |
| DATE 11.07.15               | DATE 11.07.20                          | DATE 11.07.21 | DATE 11.07.21                           | DATE 11.07.21                  | DATE 11.07.21             |              |

**PURPOSE:**

REPLACE MAGNOBOND WITH PROSEAL.

*gse/H*

**CHANGE:**

IS:

| Item | Qty<br>-147 | Qty<br>-147B | Part Number     | Description                   |
|------|-------------|--------------|-----------------|-------------------------------|
| 9    | A/R         | A/R          | PROSEAL 890 B-2 | SEALANT, AMS-S-8802 CLASS B-2 |

WAS:

|   |     |     |                |   |
|---|-----|-----|----------------|---|
| 9 | A/R | A/R | MAGNOBOND 6398 | ROCKWELL SPECIFICATION RBO-120-023<br>ADHESIVE (TEXTRON/BELL SPEC. 299-947-100,<br>TYPE II, CLASS 2 ADHESIVE) |
|---|-----|-----|----------------|---|

NOTE 12 & 15, SHEET 1 IS AMENDED AS FOLLOWS:

IS:

- 12) TO INSTALL D2893-1 SUPPORT: ABRADE MATING SURFACE OF SUPPORT AND CROSSTUBE WITH 180-GRIT SANDPAPER AND REMOVE RESIDUE WITH MEK (OR EQUIVALENT). APPLY A 0.04" TO 0.07" THICK LAYER OF PROSEAL 890 CLASS B-2 (OR AMS-S-8802 CLASS B-2) SEALANT TO MATING SURFACE OF SUPPORT.
- 15) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING. PRIOR TO PACKAGING, RE-CHECK TORQUE ON CLAMPS AFTER PROSEAL 890 SEALANT HAS CURED FOR 72 HOURS.

WAS:

- 12) INSTALL D2893-1 SUPPORT USING 0.03" TO 0.06" THICK LAYER OF MAGNOBOND 6398 TO THE SURFACE OF D2893-1 THAT WILL BE IN CONTACT WITH THE CROSSTUBE PER QSI 015. LET CURE FOR 12 HOURS AFTER INSTALLATION AND PRIOR TO PACKAGING.
- 15) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING.

*RELEASED  
2011-07-28  
WCB*

| W/O: |      | WORK ORDER CHANGES |    |      |     |                                     |                          |
|------|------|--------------------|----|------|-----|-------------------------------------|--------------------------|
| DATE | STEP | PROCEDURE CHANGE   | By | Date | Qty | Approval<br>Chief Eng /<br>Prod Mgr | Approval<br>QC Inspector |
|      |      |                    |    |      |     |                                     |                          |
|      |      |                    |    |      |     |                                     |                          |

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_  
 Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

| NCR: |      | WORK ORDER NON-CONFORMANCE (NCR) |                             |                                 |                |                           |                       |                          |
|------|------|----------------------------------|-----------------------------|---------------------------------|----------------|---------------------------|-----------------------|--------------------------|
| DATE | STEP | Description of NC<br>Section A   | Corrective Action Section B |                                 |                | Verification<br>Section C | Approval<br>Chief Eng | Approval<br>QC Inspector |
|      |      |                                  | Initial<br>Chief Eng        | Action Description<br>Chief Eng | Sign &<br>Date |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |

NOTE: Date & initial all entries



# LIQUID PENETRANT TEST REPORT

P- 10159

CLIENT  
ATTENTION  
ADDRESS

PROJECT  
ITEM(S) EXAMINED

OB DESCRIPTION PROCEDURE NO. LT-003 REV./DATE 2009 TECHNIQUE NO. LT-003 REV./DATE 2009

ART NO. MATERIAL Aboidec Acrylic / THICKNESS N/A

COPE *Performed a wet fluorescent LPI on 100% of the external surface on items mentioned*

## TEST DETAILS

|                  |   |                                  |                                     |  |  |
|------------------|---|----------------------------------|-------------------------------------|--|--|
| METHOD           | <input checked="" type="checkbox"/> FLUORESCENT | <input type="checkbox"/> VISIBLE | <input type="checkbox"/> WATER WASH | <input type="checkbox"/> SOLVENT REMOVABLE | <input type="checkbox"/> POST EMULSIFIED   |
| MANUFACTURER     | MACNAUL   |                                  | BLACK LIGHT S/N 13798               | OUTPUT > 1000 $\mu$ W/cm <sup>2</sup>      | AMBIENT < 2 fc   |
| ENETRANT         | 2L-67   | MINIMUM Dwell TIME               | 45 MIN.                             | LIGHTING EQUIP.                            | <input type="checkbox"/> FLASHLIGHT <input type="checkbox"/> TROUBLELIGHT <input type="checkbox"/> OUTPUT > 100 fc @ SURFACE |
| ENETRANT REMOVER | 1420  | MINIMUM DRY TIME                 | >10 MIN.                            | OTHER                                      |  |
| DEVELOPER        | SKD-SX  | MINIMUM Dwell TIME               | 30 MIN.                             | LIGHT METER S/N 1098866                    | CAL DUE DATE 07-28-2012  |
| DEVELOPER TYPE   | <input type="checkbox"/> NON AQUEOUS            | <input type="checkbox"/> AQUEOUS | <input type="checkbox"/> DRY        |  |  |

## TEST SURFACE

URFACE CONDITION  AS GROUND  AS WELDED  MACHINED  SHOT BLASTED  CLEAN BARE METAL

URFACE TEMPERATURE  < -4°C/20°F  -4°C/20°F TO 10°C/50°F  10°C/50°F TO 52°C/125°F  > 52°C/125°F

RESULTS-  METRIC  IMPERIAL

1. CROSSTUBE FWD WO ID 86328 ✓  
2. " FWD WO ID 86337 ✓  
3. (Possible new STD FWD WO ID 85876 ✓)  
4. " " " " WO ID 85877 ✓

ITEM ID D212-664-101  
ITEM ID D212-664-101  
ITEM ID D212-664-107  
ITEM ID D212-664-107

No RELEVANT INDICATION WAS DETERMINED AS PER APPLICABLE STANDARD

12.07.18

## CODE OF SERVICES

The agreement of Acuren Group Inc. to perform services extends only to those services provided for in writing. Under no circumstances shall such services extend beyond the performance of the requested services. It is expressly understood that all descriptions, comments and expressions of opinion reflect the opinions or observations of Acuren Group Inc. based on information and assumptions supplied by the owner/operator and are not intended nor can they be construed as representations or warranties. Acuren Group Inc. is not assuming any responsibilities of the owner/operator and the owner/operator retains complete responsibility for the engineering, manufacture, repair and use decisions as a result of the information or other information provided by Acuren Group Inc. In no event shall Acuren Group Inc.'s liability in respect of the services referred to herein exceed the amount paid for such services.

## STANDARD OF CARE

In performing the services provided, Acuren Group Inc. uses the degree, care and skill ordinarily exercised under similar circumstances by others performing such services in the same or similar locality. No other warranty, expressed or implied, is made or intended by Acuren Group Inc.

## SIGNATURES

CLIENT REPRESENTATIVE

*John T. Hey*  
PRINT  
1<sup>ST</sup> TECHNICIAN  
CGSB LEVEL 2 SNT LEVEL 2  
CGSB REG. NO. 3049

*John T. Hey*  
SIGNATURE

DTR # 685711

TECHNICIAN (SIGNATURE):

*John T. Hey*  
PRINT  
2<sup>ND</sup> TECHNICIAN  
CGSB LEVEL 2 SNT LEVEL 2  
CGSB REG. NO. 3049

REPORT  
REVIEWED BY:

NAME

INITIALS

NAME (PRINT):

—  
2<sup>ND</sup> TECHNICIAN  
CGSB LEVEL — SNT LEVEL —  
CGSB REG. NO. —

WHITE - CLIENT COPY

CANARY - OFFICE COPY

PINK - TECHNICIAN COPY

GOLD - OFFICE COPY